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CEMENTITIOUS COMPOSITIONS

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This invention relates to cementitious compositions; and particularly to such compositions for use with gypsum wallboard, especially for filling the joints between panels and for smoothing the surfaces of the boards after installation.

In order to produce a monolithic effect in a construction using gypsum wallboard it is necessary to treat the joints between boards, nail heads and any other surface defects so that a smooth, uniform surface results. Cementitious or adhesive materials have been proposed for these purposes in the prior art, but have had some disadvantages. Many such compositions have had a protein base, for example, but this type of adhesive requires considerable waiting time, for instance, 20 to 30 minutes, after mixing the dry powder with water, to allow the protein to go into solution. In some commercial cements a marked change in consistency occurs during the waiting period so that it is necessary to readjust the consistency by mixing in more dry powder to obtain a workable paste. A strongly alkaline pH is also essential in employing such a material. This strongly alkaline condition is quite disadvantageous in application to wallboard because it is injurious to the paper covering of the board, resulting in weakening of the paper and marring its surface appearance. In other practices of the prior art, farinaceous substances have been employed in such compositions, but it has been necessary to use only small portions because of the increased tendency to cause cracks and checks in the surface, which remain even after the surface has been painted. The tendency to crack and check also occurs in the same manner with the protein-containing materials which also shrink appreciably in drying.

The above disadvantages are overcome by the cementitious composition of the present invention; and still further advantages are obtained. According to the present invention there is provided a cementitious composition, or a cement for forming joints between wallboards and for providing a smooth, uniform surface for wallboards, containing from 35% to 50% deadburned gypsum, from 15% to 20% of dextrin, from 5% to 10% of clay, from 10% to 20% of mica, from 10% to 20% of asbestos, and less than 1.0% of Portland cement. Preferably, the cementitious composition also contains from 0.5% to 2% of a dispersing agent, or from 0.2% to 1.0% of a wetting agent, or, advantageously, both of these ingredients. Alternatively, if desired, the wetting agent or the dispersing agent, or both, can be

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added to the mixing water at the time and place of use of the composition.

The composition is employed as a finely divided powder, according to the usual good practice in this art. In use, it is mixed with water to a smooth paste and can be applied to the joint or surface immediately. e. g. in filling the joints between adjacent edges of wallboard or in covering nail heads or surface defects in the board. Any paste which remains unused at the end of a working day can be retempered, that is, mixed with water to the desired consistency, replacing water lost by evaporation, on the following day, and can be then employed in the same manner as freshly prepared paste. The cementitious paste is applied to the wallboard joint or surface and sets to a hard composition in a short time, for example in about 2 to 3 hours, depending on weather conditions, due in large part to setting of the dextrin component; upon further standing the deadburned gypsum or Keene's cement slowly sets also, forming a strong mass of interlaced gypsum crystals, providing still further increased strength, hardness, and water- and heat-resistance.

The deadburned gypsum employed is Keene's cement or other deadburned gypsum which sets very slowly and is not sensitive to atmospheric moisture. Keene's cement, for example, is well known to the art and comprises a gypsum calcined to a temperature of 1200° F. to 1600° F., which after calcining is ground to substantially pass a 100 mesh screen, and then usually a small amount of accelerator is added, for instance less than about 1% of aluminum sulfate or potassium sulfate, or of each when both are added. Such material, because it sets slowly in the cementitious composition, provides late and increased strength in finely divided form in order to provide a smooth surface when set. Suitably, this gypsum can be of a size to substantially entirely pass a 100 mesh screen. The dextrin component is, for example, a dextrinized starch, or it can be a mixture of dextrin and a minor portion, up to about 15% of the weight of this component, of a partially dextrinized starch which, for example, can contain from 20% to 40% water-soluble constituents, or which contains from 15% to 25% water-soluble starch and dextrin calculated as starch. As an example of one partially dextrinized starch useful in this invention, such a material is employed which requires, per 100 grams thereof, 500 to 600 milliliters of water to form, upon mixing, a paste which will just pour. Mixtures of dextrin and such partially dextrin-